

Micro Aerial Vehicles

An EADS Perspective

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Organisation

ISR within EADS



- Naval & Air Defence
- **ISR Systems**
- C3I Systems
- Public Safety
- Communication & Information Networks

EADS UAV Systems Portfolio

ISR covers the complete range of UAVs :

- High Altitude Long Endurance (HALE)
- Medium Altitude Long Endurance (MALE)
- High Speed Tactical UAV
- Vertical Take-Off & Landing UAV
- Slow Tactical UAV
- Micro-Air Vehicle
- Unmanned Ground Vehicle



MAV in EADS

- EADS does not sell UAV's but ISR systems, e.g. for
 - Local / close-up range, hidden, real time situation awareness
 - Over the hill reconnaissance and urban missions
 - Homeland security
 - Civil application (police, fire brigade)
- MAV compete against any other kind of urban intelligence:
 - Local or parachute cameras
 - distributed (noise, BC, ...) sensor networks
 - communication intelligence, etc.
- Desirable properties of a MAV platform must be analyzed and subsequently improved
 - Man transportable; low-cost; easy-to-use; easy-to-maintain; reliable; enduring; sufficient range; interoperable
 - sharp, stable day-and-night pictures / sensors
 - low-noise & visibility; reliable, real-time link; operable in buildings

MAV in EADS

- Today, demonstrators but no “product”
- Full system required, including
 - Concept of operations
 - Platform, Communication, Ground Segment, Infrastructure
 - Training, Life Time Support
- Low-end UAV system
 - Low price (< 10 kEUR)
 - Large numbers (> 1000)
 - Frequent upgrade cycles
- Rather marketing than business case
 - Total EADS market < 100 MEUR in xx yrs
- Create MAV family, e.g. fixed-wing / rotary
 - Adopted to mission
 - Interoperable

DO-MAV



German MAV – Competitive Testing

- BWB plans competitive testing early 2004 (twice delayed!)
- Acquisition of demonstrator systems planned after
- Market availability assumed
- EADS DO-MAV to be demonstrated to DGA, UK DPA (JUEP)



MAV – a business case?

- EADS ISR is primarily a system leader
 - ISR is a lead system integrator
 - Focus on the most cost efficient available technology
 - Integrate in ISR system tailored to customer needs
 - Simple handling & reliability more important than fancy features
- MAV must be a business case
 - Money wise
 - Marketing wise
 - Technology wise



MAV – a business case?

- Money wise
 - MAV assumed to be a low-cost, high tech product
 - Technology must allow for series production
 - Components should be COTS
 - No high development cost up-front
- Marketing wise
 - Be quick - Technology should leave university & labs as soon as possible and must allow for immediate realization
 - Spiral development - Start simple and upgrade
- Technology wise
 - No over-design - New technologies must allow for better, cheaper, simpler, new solutions

MAV – Research / Industry Relation

- Research
 - Bring first demos rather than ideas
 - Short-term results & stepwise improvements
 - Flexibility to react quicker
- Industry
 - Limited to applied research and product development
 - Watch research market
 - Flexibility to act quicker
 - Invest into (few) promising technology approaches
 - Link between customers and research facilities

MAV – Customer Relation

- Public Customer
 - Public customers with complex procurement structure adverse to acquisition of simple, cheap new systems (Mil, Gov)
 - Long lead times to develop ConOps, request funding
 - Exception: US FCT, SOCOM, GE “Einsatzmittel-Sofortbedarf”
 - Own research institute structure to support military needs
 - (Europe: Limited) funds for product development at industry
 - ConOps rather mission-driven, special requirements regarding availability, all-weather, all-day etc.
- Civil Customer
 - Buys only off-the-shelf
 - All lead investments to be carried by industry
 - Highly unpredictable: compare to satellite / mobile phone story
 - “ConOps” purely cost-driven, flexible wrt environment conditions

Summary

- EADS understands itself as a system house
- Thus, we are interested in new technologies and capabilities arising from the MAV concepts & technology
- The MAV itself is only one part of one possible solution to a specific requirement
- Company investments will therefore be limited at this stage and aim at short-term results (first sales), with options for spiral development
- Investment will aim at system improvement rather than technological “gimmicks”
- Relevant fields are given by operational needs (in-house communication, reliability of total system, handling, etc.)

No single feature has a value in itself

- Companies will share customer research & development money with research institutes but current budgets are small